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33/6

Combat Crew

Strategic Air Command

JUNE 1983

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Professionalism and a Responsive, Combat-Ready Force

For over 35 years, the Strategic Air Command has provided this nation and our allies a viable, combat-ready force to deter aggression and promote our national objectives. The ability of this force to accomplish SAC's mission depends on professional crew members that are responsive to the nation's needs. Although SAC is made up of a cross section of individuals as diverse as our society, professionalism molds each crew or unit into a team, depending on each other for mission success. It is the vital glue that holds this team together, not only in times of crisis, but also in its day-to-day actions.

Professionalism is clearly the hallmark of the SAC crew force. Embodied in this professional group are individuals, who, through prolonged and intensive training have acquired skills which enable them to provide a specialized service to their country and community. In addition, they have a strong group identity, adhering to a body of ethics and standards of performance developed by the group itself. For our mission, this requires individuals who have trained themselves well in the conduct of war in order to better maintain peace; who have loyalty to their unit; and who maintain the highest levels of personal integrity and self discipline. We would do well to review the characteristics of a professional from time to time to insure we and our subordinates are clearly on the right track.

The first of these qualities, on which all others build, is technical and military expertise. You must be an expert in your field, striving to be the best crew member in your unit. If you are not attempting to do this, you are simply not a professional. There are many technical experts who are not professionals, but all professionals must be technical experts. You must also realize that this expertise is not a constant. It demands daily practice and study, year after year. An individual who becomes comfortable with his knowledge of the job, and stops studying is no longer a professional.

In addition to technical expertise, the professional crew member must be a military expert. This knowledge is acquired and maintained in peacetime through additional military education. Through constant study in times of peace, the great military leaders of the past prepared themselves for the crucible of combat. Professional Military Education is just what the name implies. This study turns specialists into leaders, enhancing the readiness of our force. This study should not be exclusively military, but include an understanding of the social, ecological and political problems of this nation and the world. Technical and military expertise is an area of which I am most proud in the SAC crew force. It is evident day after day in all that you do.

Another necessary quality is commitment to the group. Another word to describe this is loyalty — loyalty to your supervisors, subordinates, yourself, and your country. The latter, of course, is what separates you from all other professions — willingness to give your life, if necessary, in the defense of your country. But this loyalty must also apply to crew integrity. The professional fully supports the mission of the crew or unit, even to the point of sacrificing personal needs for the group's benefit. That's a tough job, but one that has to be done to develop the team. By identifying with the group, the professional also accepts the body of ethics and standards of performance espoused by the group. For the military man, this acceptance ranges from shined shoes to steadfastness in combat. Our appearance, conduct and acceptance of responsibility must support the team — the American public deserves no less. And, without integrity, the other qualities do not mean much. A person without integrity cannot be committed, loyal or self-disciplined in the performance of his or her duties.

Your dedication to these qualities of professionalism has insured a credible, responsive strategic deterrent force. We can look back with pride on the many years

Maj Gen John A. Brashear, DCS/Operations, SAC

strategic forces have maintained peace. We can also look forward to the acquisition of new weapons systems so we can remain the peace keepers of the world. But weapons systems, new or old, are useless without the professionals to operate them. Those who say that our modern machines will reduce the importance of the individual are wrong. The demands today are greater than ever before. The trust required is greater because of the sheer power and cost of the systems involved. A professional can be trusted with the awesome responsibility of strategic weapons because he has the necessary expertise, commitment, loyalty, self-discipline and integrity to give dedicated service to our nation.

It might sometimes seem to you that these professional qualities are more necessary in wartime than today; that situations available to put the above-mentioned qualities into practice today occur less frequently. This simply is not true. The professional is a part of the team at all times. He must train himself and demonstrate these qualities on a daily basis, insuring that they are there in times of crisis. We can only remain responsive and ready by constantly reminding ourselves of our professional commitment.

Professionalism starts with the oath we took to defend the Constitution of the United States and is the key to a responsive, combat-ready force. True professionalism can only be attained by actually living a life described by the qualities I have mentioned. I know that professionalism is deeply imbedded in the SAC crew force. For over 35 years it has been the key ingredient in successful mission accomplishment. Your continued diligence will insure we retain the quality force necessary to meet the responsibilities that have been entrusted to us. ★★

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Combat Crew

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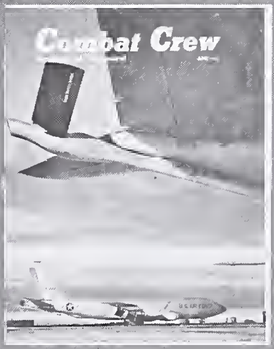

ON OUR COVER

The end of a KC-135 is all business.

SACRP 127-1 VOL. XXXIII NO. 6 June 1983

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PROFESSIONAL:

What that overworked term means to me.

LtCol Douglas B. Aitken
46 BMS, Grand Forks AFB, ND

The ideas put forth in this article are by no means new or all that unique. They are mine only in the sense that I've penned them for this forum. They have been developed through much discussion and thought with my elders and contemporaries — folks who took the time to share their thoughts — starting when I was a lieutenant in "high water" 1505's. I wish I could give proper literary credit where due, but, alas, my feeble memory fails me. The basis for this article is a letter given to each officer of the 46 BMS, Grand Forks AFB, ND; so while it may be specific in that regard, I think it still applies across the board — not only to officers, but also to NCO's and airmen, members all — of a unique profession.

I was "waxing philosophical" at the bar the other night — it's amazing how eloquent one can be at the bar — and I realized that the 46th is the seventh tactical squadron I have been associated with in my 16 years of service. What's sad about that fact from a personal standpoint is that this will be my last assignment to a tactical squadron. It's sad because there is something special about squadrons — especially flying squadrons. As a friend of mine, who was then assigned to the Air Force Academy, said enviously, "There is nothing like being where the action is — being the pointed end of the spear." To which I replied, "Yea, but you had better make sure your pointed end isn't dull!"

In reflecting on this, I thought I would attempt to pass along some of my observations concerning squadrons in general, and your role in this squadron in particular. Accordingly, this letter will be somewhat lengthy, but you should be able to get through it in a couple of trips to your friendly stall down the hall. So, let me first pass along some thoughts on squadrons.

While I honestly can't say I have ever been assigned to a "bad" squadron, a couple stand out in my memory as being a cut above the others. And those really good squadrons had a lot of common threads running through them. From the Commander on down, leadership was evident in commitment to get the mission accomplished in the best way possible. And no matter what that mission was, those guys were good at it, and they **knew** they were good at it. It seemed everyone was involved in what they were doing, and as a consequence morale and esprit were high. Along that line, I've always felt that you can't measure morale and esprit – but it's sure evident when they are present; and it's also evident when they are not present. These are rather abstract terms, and they are tough to get a handle on, but try this: **morale** is when your head says, "There ain't no way," but your hands and feet keep working. Morale stems from pride – self-pride and pride in your unit. It comes from **knowing** you're good at what you do and from working with a bunch of other folks who feel the same way – so that collectively you know that the unit next door – or anywhere – just can't do the job the way yours can. Esprit, while going hand in hand with morale, comes from having done the job, not only well, but better than others. It's a pride in your unit's past accomplishments, and is passed from the "old heads" to the "newbies." It is also looking ahead for additional challenges to demonstrate to the world that yours is in fact a unique outfit.

Now, where do you fit in? Did you ever see the Army recruiting advertisement where they end with, "It's not just a job, it's an adventure." Well, I'd like to change that just a little and state, "It's not just a job, it's a profession." And here, really, is the heart of what I want to get across, for **each** of you is a member of a profession – a unique one – the profession of arms. From my vantage point, one admittedly filled with lots of grey hair and a wrinkled face, I've formed the opinion that my generation of officers has failed those younger than us in failing to stress the term **"professional"** and all it implies. Accordingly, I have observed that there are those who consider being an officer in the USAF as a neat **job,** involving "slipping the surlies," wearing flight suits, etc. Well, let me tell ya, the first thing you are is an **officer.** Some of you probably had an experience when you were about to come on active duty where an acquaintance said something like, "So you're going into the service . . . " Think about that word for a moment – service; it really fits, for you are literally serving your country – in all that you do – 24 hours a day. Alas, but I have digressed – back to the main point: job vs. profession.

My American Heritage Dictionary says a job is "an action requiring some exertion; a task; an undertaking." In addition, it states, "a specific piece of work to be done for a set fee." Profession, on the other hand, is defined as, "The body of qualified persons of one specific occupation or field." By being a part of a profession, you'll have noticed we have all those items which make a profession unique: standardized rules, accepted ethics, unique accouterments, specialized work, etc. So, my message to you is, never forget that **first,** you are are **officer in service** to your country, in the **profession** of arms. The **task** (read job) you perform as a **part** of that service is a highly skilled one of ______ (fill in the blank – Pilot, Nav, EW, etc.). Your commission (read it lately?) is really a contract between you and your country – this means that while you perform your **job** by flying or standing alert, your responsibilities do not end there. Your profession, your "officership," requires – demands – that you be on duty literally 24 hours a day. This includes fulfilling both written and unwritten obligations, and it entails a considerable amount of self-discipline on your part. In some cases, it also involves some sacrifice on your part.

Morale is when your head says, "There ain't no way," but your hands and feet keep working.

I clearly remember December 1979 when half of the 28BMW deployed no-notice to Guam during an ORI. If you remember, the hostage crisis in Iran was in full swing, and as you might imagine, rumors were running fast and furious at Ellsworth – no one **really** knew what the crews would be doing after arriving at Guam. I did not deploy, but stayed behind to finish the rest of the ORI with what remained of the Wing. A portion of my responsibilities involved keeping the families of those who had deployed up to speed on what we knew. It was really amazing. The wives of the older husbands had been through this type deployment before in the sixties and seventies – it was old hat to them. It was interesting to talk to the younger wives for whom this experience was a first. Most took the departure and uncertain status of their loved ones quite well. I do remember having numerous discussions with one young wife who couldn't understand how "we" could do this to her husband and family. At one point, I clearly remember telling her (about the 7th or 8th session), "Ma'am, your husband does not get paid to drop tones at Bismarck or La Junta; your husband gets paid for doing what he is doing right now."

Hopefully, this letter will have given you an insight into my thoughts on how I see your role in the Air Force and this squadron. And I feel they apply whether you are the most junior or most senior officer here. Being a professional warrior is not an easy task; but in meeting and overcoming the difficulties lie the rewards for your service. So, though we get caught up in the hectic schedule of daily activities, I urge you to keep these thoughts in mind and make the term "professional" mean all it should be. Take pride in what you do and what you have done. And, if you think this letter was a bit long and disjointed, I can only urge you to join me at the bar Friday night (I'll be the guy pouring Scotch from my Johnson's "Glo Coat" bottle), where we can both "wax philosophical" and together solve the rest of the world's problems.

TAMING IN-FLIGHT Stress

Capt Wes Routh
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In-flight stress is a problem aviators face daily. When stress is kept at a low level, we can control most situations and avoid accidents. When faced with a higher stress level, critical performance loss occurs. The flood of recent mishaps shows a need for further discussion of this topic because stress is costing us our precious resources: **people, aircraft, money.** What can we realistically do about in-flight stress? The first thing we can do is recognize that stress will always be present to some degree. Then we must learn about stress — what it is and how we can reduce the effects of environmental and self-imposed stress. Furthermore, we must learn how to cope with in-flight stress by thorough mission planning, effective time management, simplified decision making and by controlling our reactions to stress.

The *Random House Dictionary of the English Language* defines stress as "physical, mental or emotional strain or tension." During a squadron training day, the flight surgeon explained that stress distorts our reactions to any task and that physical exercise, a balanced diet and meditation will help combat stress. Following this advice is important to every crewmember. We also need to know how to deal specifically with stress as we prepare for and fly our aircraft, so let's look at the problem from another angle.

Another definition of stress as it applies to mechanical physics is "the action on a body of any system of balanced forces whereby strain or deformation results." An analogy can be drawn to the inflight "system." Each crewmember is a body of the system. The forces are balanced when there is good crew coordination and when all tasks are being correctly performed. When any one person stops performing or coordinating adequately, the system within the aircraft is distorted. Our goal is to decrease this distortion by reducing the stress we are able to control especially environmental and self-imposed stress.

Environmental stress is one of the most obvious road blocks to effective performance and is generally one of the easiest to deal with. **Aviation Psychology** lists several examples of the two types of environmental stress:

- Physical (which causes discomfort): prolonged work; temperature extremes; pain; hunger; thirst.
- Mental (which causes anxiety): concern over one's status; worry about family illness; weather conditions; traffic; inadequacies of other persons.

As crewmembers, we must eliminate the environmental stress we can control. We also have a personal responsibility to keep the mission foremost in our minds. If other problems are controlling our thoughts, we must not take part in flight activity. It is a lot easier to replace one crewmember for a couple of days than it is to lose a crew and aircraft because of environmental stress. In addition, if crew fatigue becomes a problem, AFR 60-1, SAC Sup 1, grants the crew commander the authority to terminate the crew duty day. In the end, the best policy for dealing with environmental stress is to keep your body comfortable, but keep your mind on the job.

Another problem area where crewmembers exercise some degree of control is where stress is self-imposed. The Air Force Refresher Physiological Training emphasizes five categories of self-imposed stress: drugs, exhaustion, alcohol, tobacco and hypoglycemia. D.E.A.T.H. is an acronym that is sometimes used to describe these self-imposed stresses. As with other forms of stress, they negatively affect individual and crew performances. Your personal commitment is required to keep them to a minimum. If your physical and mental condition is not up to par, you will not achieve the best results. Because we are subjected to so much stress, thorough mission planning is especially important to us.

Most crewmembers could tell you the importance of thorough mission planning, but they probably do not understand all the implications. I have seen several instances where crews acted like the minimum time allowed in SACR 50-12 for mission planning was actually the most time ever spent in preparation. In their haste to get done early, important areas are glossed over or omitted completely. In their haste to fly ACE, many pilots frown at the mundane tasks associated with mission planning. We all are guilty in some way or another of neglecting this critical step, so what can we change that will help reduce in-flight stress? Here are some simple suggestions.

- Make a pact with yourself and others to expect perfect mission paperwork (after all, our obligation is to excellence).
- Don't just brief the mission, analyze it. Make sure the crew understands every maneuver.
- Always review the portions of the technical order and regulations which are applicable to the mission.
- Coordinate with the tanker/receiver to determine training requirements.
- Plan approximately how you will burn/offload/onload fuel for the entire flight and figure centers of gravity to make sure your plan will work.
- Be meticulous in every action. (How many of you can honestly say you have reviewed the type of instrument markings you can expect to see on the runway as required by SACR 50-12?)
- Plan takeoff data for every reasonable condition you can expect.
- Plan an alternative course of action for every phase of the mission from preflight to obtaining a crew bus after landing.
- Cancel or delay other activities that interfere with adequate planning.

This is not an exhaustive list, but if these suggestions are followed, you will make fewer mistakes and will be well on your way to reducing in-flight stress.

Effectively managing your time in flight is another extremely important factor and it too begins with your preparation on the ground. Analyze how you spend your time and try to improve. Accomplishing all items which can be done ahead of time will eliminate several choke points. For example, complete the landing data card before leaving base operations and prefigure the "worst case" landing ground roll distance. There are examples of these items for every crew specialty. Look for them and get ahead of the game. Once you get airborne, use the small gaps between required actions to your benefit - complete HEFOE checks, paperwork, etc., but get something done. If you are patting yourself on the back because you are pretty good at the first two time-saving techniques, you may still have room for improvement because the next step is to eliminate all the actions that waste your time or take your mind off the task at hand. Daydreaming and idle chatter cost you precious seconds. You also might be amazed at how much extra time you have available for in-flight actions if you quit smoking. Your performance will improve because you can devote more attention to your work (I learned first-hand five years ago). Following these time saving techniques will make your job easier and improve overall crew performance. If you can reduce environmental and self-imposed stress, thoroughly plan all phases of each mission, and effectively use your time, you can really concentrate on the critical events that require immediate in-flight decisions.

Simplifying the decision-making process can significantly reduce the stress crewmembers encounter in flight. One of the easiest ways to simplify this process is to possess a good working knowledge of flight manuals, regulations and aircraft systems. Effective self-study, useful seminars for each crew specialty, mission critiques and crew meetings are vital for developing this technical knowledge and will result in your having less cause for concern when unusual circumstances occur.

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UNITED STATES OF AMERICA
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Flight Safety Plaques

19 BMW, Robins AFB
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Missile Safety Plaques

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44 SMW, Ellsworth AFB
321 SMW, Grand Forks AFB
379 BMW, Wurtsmith AFB

Nuclear Surety Plaques

92 BMW, Fairchild AFB
379 BMW, Wurtsmith AFB
410 BMW, K I Sawyer

Explosives Safety Plaques

1 STRAD, Vandenberg AFB
28 BMW, Ellsworth AFB
92 BMW, Fairchild AFB

SAC's Aircraft Commander Textbook says, "Many decisions are made for you by directives" and that "regulations, manuals and effective mission planning can take care of 90% of spontaneous airborne decision making." Another important step is to know your own limitations and the capabilities of others on your crew. The combined abilities and experiences of all your crewmembers, not just your own, must be carefully weighed before proceeding with any course of action. A third method is to develop good crew coordination, a review of the 33 helpful suggestions listed in chapter nine of the Aircrew Commander Textbook would benefit all crewmembers. Simplifying the in-flight decision making process is no easy task, but your concerted efforts in these areas can make it happen and will help you control how you react to stress.

Your reaction to stress will directly affect the outcome of any situation you experience in flight. How many times have you heard a pilot ask the navigator what airspeed or heading to fly when the pilot could easily have found the information on his own copy of the SAC Form 200 and then watched the navigator explode with frustration at being interrupted during his busiest moment? Alternately, how many times have you seen crewmembers quickly choose a course of action without considering the other alternatives or the consequences. Mishap files are full of these cases. That is why our flight manuals recommend that you STOP. THINK. COLLECT YOUR WITS. Now I'm sure you are thinking "After I collect my wits, what else can I do to avoid destructive or immature reactions to the stress that so often interferes with my efficiency?" **Aviation Psychology** and others list several excellent ideas. They include: channeling your activity into positive action; controlling your emotions and avoiding panic; establishing good habit patterns by training for emergency situations; establishing good morale conditions by: fostering confidence in the crew and the equipment, avoiding personal attacks, and putting problems (hazards) in their proper perspective, thereby realistically appraising the risks involved. All these actions will help you deal with stress and make you a positive, helpful resource to your crew in an emergency.

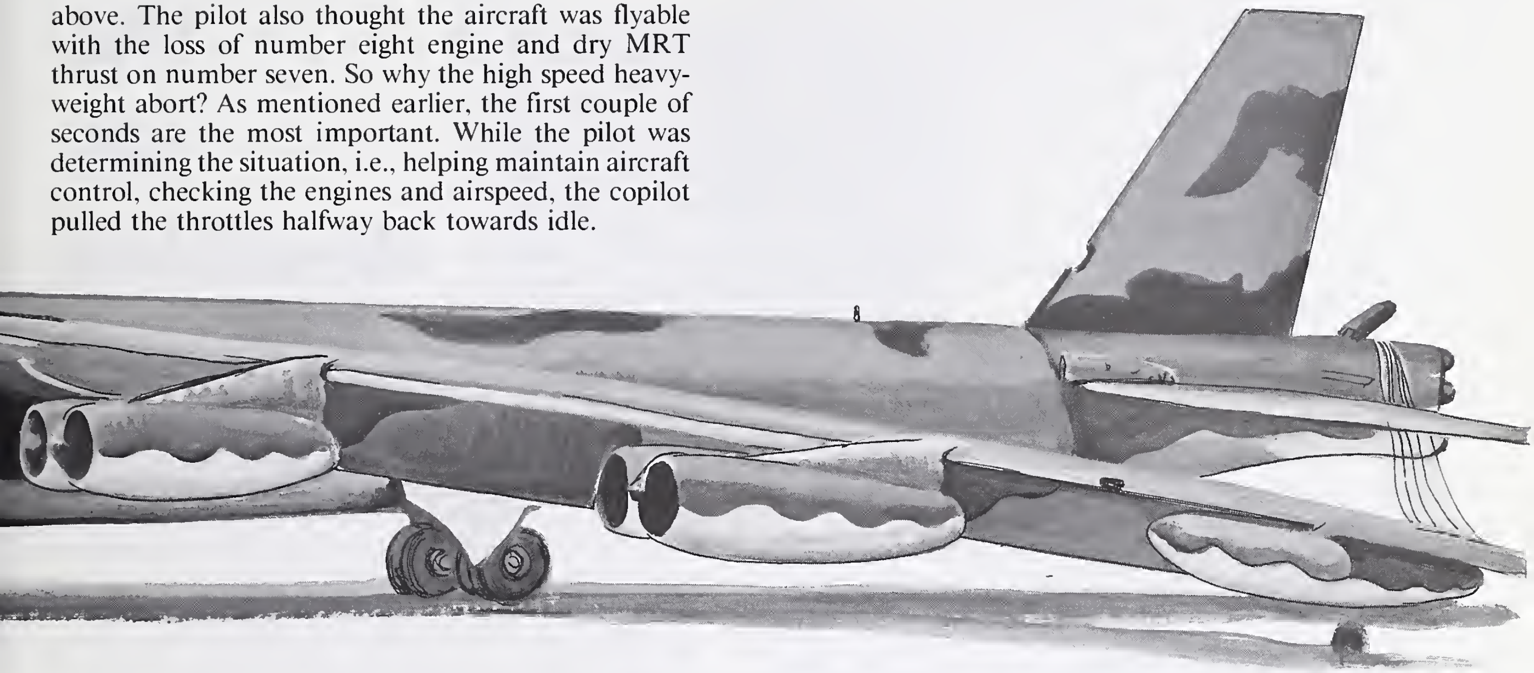
As you can see, taming in-flight stress is no easy task, but it is one we must tackle. Recognizing stress as a hazard is the starting point. When we all know what it is, know where to look for it and plan ahead to minimize its effects, we may all see an improvement in our mishap rates. It will take your support and hard work to achieve this goal. Isn't it worth the effort to save even one life and get the job done right?

The Four Factors

Capt Larry Eickhoff
524 BMS, Wurtsmith

There have been many articles and discussions on handling aircraft emergencies. Some are very general as in the Dash 1, stop—think—collect your wits, while others are as specific as the 13 priorities during an emergency. These are excellent methodologies for handling an emergency, but I would like to present what I consider to be the four decisive factors that determine the successful completion of an aircraft emergency. The four factors are: **aircraft control, systems knowledge, decision making, and the variables.** To further describe these factors, let's use as an example a heavyweight B-52G with a water augmented takeoff.

The most difficult part of any critical emergency is making the right decision. Many times the decision has to be made instantaneously, as in this case. The bird strike, discovered after the abort, occurred at 118 KIAS, one knot below S1 speed. Therefore, the takeoff had not been committed. The initial reaction of the copilot was to place the aircraft on centerline and abort. The pilot's initial reaction was to continue the takeoff. Let's examine both pilots' decisions. The copilot's decision was based on the fact that the takeoff was not committed and that he thought he could stop the aircraft on the remaining runway. The pilot's decision was made on the system knowledge and experience stated above. The pilot also thought the aircraft was flyable with the loss of number eight engine and dry MRT thrust on number seven. So why the high speed heavyweight abort? As mentioned earlier, the first couple of seconds are the most important. While the pilot was determining the situation, i.e., helping maintain aircraft control, checking the engines and airspeed, the copilot pulled the throttles halfway back towards idle.



The pilot, seeing the throttle positions, determined that there could be massive thrust loss due to water flooding the engines. Now the pilot had another decision, whether to push the throttles back up and risk massive thrust loss on takeoff, or risk a high speed heavyweight abort with possible loss of hydraulics due to engine flooding. The pilot aborted successfully and both the crew and aircraft survived without any major damage. But what about the last factor, the variables?

The variables are the most insidious factor in the successful completion of an emergency. The variables are such things as weather, related system failures, other system failures, etc. Variables that could have affected the high speed abort were numerous. Although it was night, the runway was dry. Had it been wet, the stopping distance could have been doubled. The water system did not flood any of the engines and the antiskid system worked, as did the drag chute. Had any one variable or combination of variables been against the crew, the abort might have had a totally different outcome.

Crewmembers are subjected to numerous aircraft emergencies. Most emergencies are not as critical as this one, but we need to be prepared for the day it happens. We should always maintain aircraft control, have the required systems knowledge, make timely decisions, and compensate for the variables. The next time you are studying emergency procedures or you're in a hangar flying session, consider these factors and how you might react to them.

The crew arrived at the aircraft in the early evening and everything was normal until takeoff. The copilot was making a water takeoff on a dry runway at night with a 460,000 pound aircraft. The takeoff roll was normal with the water initiating well before the 70-knot hack. As the navigator was calling coming up on S1 timing, there was a loud bang from the right wing and the aircraft yawed about 20° to the right. The copilot applied left rudder and pulled the throttles about halfway back. Then the pilot made the abort, stopped the aircraft and the crew egressed uneventfully. Now let's go back to the four decisive factors in the emergency.

The first and most important factor in any emergency is maintaining aircraft control. Aircraft control is usually most critical in the first few seconds after the emergency starts. In this case, the copilot saw the aircraft yaw and applied the rudder to put the aircraft back on centerline. Had the pilot decided to continue the takeoff, aircraft control would have become even more critical, considering reduced thrust, yaw and roll problems. Now the question might be asked, why didn't the pilot take off? Well, let's look at the second factor, systems knowledge.

Systems knowledge can be gained in many ways. It can be learned by reading the Dash 1, through previous experiences and by hangar flying. In the month prior to this incident, the pilot had aborted another takeoff for a water system failure. This abort was unusual because as he aborted, engines five and six flamed out even though he turned the water system to off prior to placing the throttles to idle. This left him with the knowledge that the water system doesn't always work as advertised in the Dash 1. The pilot also knew by reading the Dash 1 that there is a possibility of the even-numbered engines flooding if the throttles are retarded below 86% without first turning off the water system. One other important piece of knowledge he had was the brake energy limits. Prior to the takeoff, the copilot computed and briefed that 85 KIAS without the drag chute, and 97 KIAS with the drag chute would place the aircraft in the caution zone. Although there are many other considerations about the aircraft systems, these determined the pilot's decision.

This article is the final hurrah for the "Big I." The 1CEVG Instrument Division extends thanks to all those individuals, past and present, who have contributed to the success of the "Big I." Stay tuned for the "SIFC Cross Check," which will be bringing you more valuable instrument related information.

The UK Revisited

Traveling TDY to the United Kingdom as part of the European Tanker Task Force can be an enjoyable and worthwhile experience. Enjoyable as it may be, the British do some things a bit differently both on the ground and in the air. The ground procedures would take volumes to explain; the inflight procedures will be covered here briefly. Let's look at some differences in airspace division, altimeter changeover procedures, communications and approaches at Royal Air Force aerodromes that face us in UK flying operations.

AIRSPACE DIVISION

Airspace in the UK is designed to handle two types of air traffic: General Air Traffic (GAT) and Operational Air Traffic (OAT). GAT airspace is civilian controlled and oriented. OAT airspace is controlled by RAF military controllers. The United States system has nothing to compare to this.

The GAT system is composed of low altitude airways and upper air routes. This system was developed to handle a high volume of traffic much like our Jet and Victor route system. An airway joining clearance must be received from the civilian controlling agency before flying GAT. Also, when crossing a GAT route, clearance must be received to cross the route through either the civilian controlling agency, in uncontrolled airspace, or the RAF military controller. VHF capability is normally required to fly the GAT system. Crewmembers may have an occasion to fly GAT when navigating from the UK to France, Germany or Spain.

All the airspace not used by the GAT airway structure is either uncontrolled or controlled by the OAT system. The RAF controls the OAT system, and it comprises the majority of the UK airspace. It is designed to meet the peculiar requirements associated with military training profiles: enroute delays, air refueling, and air combat maneuvers. OAT airspace contains TACAN routes, similar to Jet routes, that allow for easy access to and from the flight training areas.

Additionally, OAT airspace is vertically divided into three sections. The first, Upper Airspace, is defined as FL 245 to unlimited. An area of mandatory radar service exists from FL 245 to FL 660. All military aircraft must be in contact with the appropriate "military radar unit." Aircraft must follow controller instructions and no heading or altitude change can be made without prior approval of the radar unit. Traffic separation from known aircraft and position of permanent radar echoes is provided.

The second section, Middle Airspace, extends from FL 080 to FL 245. Military radar units will provide advisory service in Middle Airspace within radar coverage limits. Radar coverage is generally computed as 10 NM radius coverage for each 1,000 feet of altitude. For example, radar coverage would be expected to extend to FL 080 at 80 miles.

The third, Lower Airspace, extends from 3,000 feet up to FL 080. RAF aerodrome facilities often provide radar service which is limited at best.

In Middle and Lower Airspace, pilots must notify controllers of any change in flight conditions (IMC or VMC). Radar advisories are relayed based upon those flight conditions. In VMC, the pilots will be given details of conflicting traffic and assigned vectors necessary to maintain separation. In IMC, advisory instructions are given first followed by details of the conflicting traffic. When under advisory service, pilots are not required to follow the advisory instructions. If a pilot does not, he then accepts total responsibility for traffic separation.

There are no requirements for pilots (other than USAF pilots) to file a flight plan or notify ATC of their presence in Lower or Middle Airspace. Obviously the potential for mid-air collisions and near misses can be high. Incidentally, gliders can operate IMC in this airspace. Look out – they're out to get you!

Airspace divisions vary from country to country. Don't forget to check FLIP Area Planning, AP/2, before flying in each country. Understand the rules before you play the game.

ALTIMETER PROCEDURES

UK procedures establish an altimeter transition altitude that is published on instrument approach and departure plates. Outside controlled airspace the transition altitude is normally 3,000 feet MSL, based on the regional QNH altimeter setting. Transition altitude in terminal control areas and military air traffic zones

Maj Arthur A. Holland
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1 CEVG, Barksdale

BIG I
(The Last I)

can vary depending on the Upper Airspace limit of the area. The transition altitude in the Mildenhall area is 4,000 feet MSL. Lowest usable flight levels can be found in the European Enroute Supplement. Beware of the low initial level-off altitudes during departure. Make certain the assigned flight level altitude is valid based on the regional QNH and insure 29.92 is set when passing the transition altitude.

RAF controlled aerodromes operate using QFE altimeter settings for traffic control. A QFE setting will indicate zero at touchdown rather than field elevation. The implications of QFE altimeters settings will be discussed later.

COMMUNICATIONS

Under most conditions when an ATC clearance is issued from ground control, the clearance will be to depart the local military traffic area; however, you will not be cleared to your destination. Additionally, your final altitude is not normally included nor is an expect further clearance time. For example, a common clearance will read, "Yankee 21, cleared to depart the Honington Zone, climb and maintain FL 150, expect higher with Honington." These clearances may sound incomplete by U.S. standards but are adequate for the UK. After departure, military controllers will often ask your intentions. You might think, "Why doesn't he look at my flight plan?" Military radar controllers do not utilize the flight plan you filed. There is no computerized national flight plan system such as ours. Once airborne, you are expected to fly your proposed route. When passing your intentions, specifying the next two points on your route of flight will normally suffice.

The RAF Distress and Diversion organization does receive your flight plan. This is a central RAF emergency organization used for priority handling of aircraft. Transmitting on 243.0 MHZ will alert this unit. The terms "PAN" or "MAYDAY," as explained in the Flight Information Handbook (FIH) are recognized by UK ATC units. Phrases such as "declaring an emergency" or "I've got a problem" may result in improper handling and lack of emergency support equipment on landing. Once the entire emergency network has been alerted you can expect to return to a discrete frequency to complete the mission.

APPROACHES AND LANDINGS

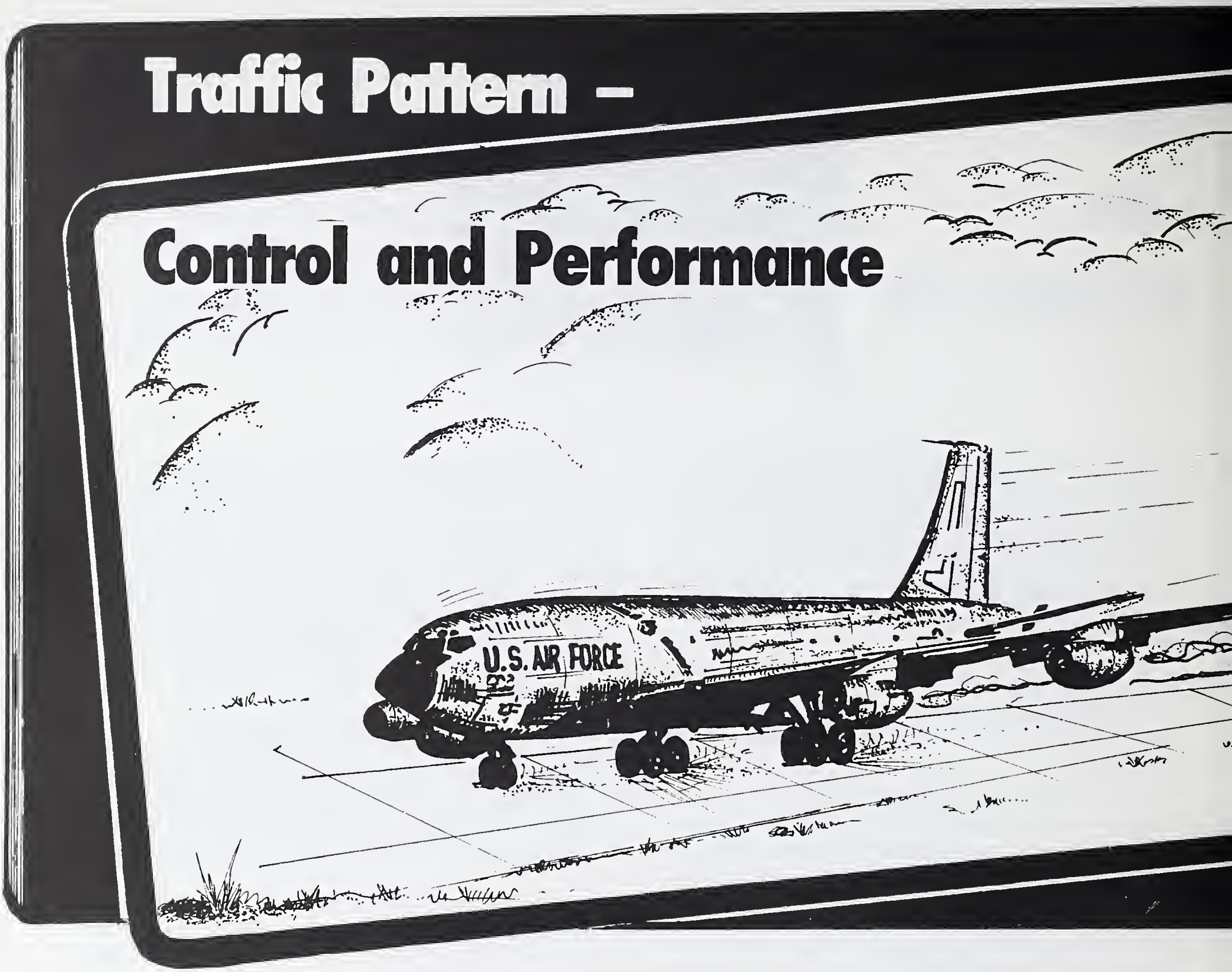
As mentioned earlier, RAF controlled aerodromes use QFE altimeter settings. Crews should be particularly alert for which altimeter setting is given because all altitude restrictions and minima are QNH altitudes. Crews must request a QNH setting to fly a published approach. When flying a final approach using a QFE setting, the HAT for the approach becomes the MDA or DH. Don't use the published MDA or DH with a QFE setting.

Terminology used at a RAF aerodrome is somewhat different from U.S. ATC terminology. RAF controllers are familiar with U.S. terminology but here are a few differences: a "diverse" equates to an enroute descent; "roller," to touch and go; "overshoot," to low approach; and "three green," to gear down.

When arriving at a RAF aerodrome, U.S. crews can expect many other differences. Approach lighting is not as extensive. The precision Approach Path Indicator (PAPI), similar to our standard VASI, is the most common glide path lighting system. See the FIH and IAP books for a further explanation. If a no-gyro approach is required at an RAF aerodrome, controllers expect pilots to make standard rate turns on final approach. BETTER YOU THAN ME! Additionally, the majority of runways in the UK are shorter and narrower than SAC runways. Be aware of the tendency to flare late on more narrow runways. Adequate runway exists for most landing conditions but that "extra pad" of asphalt doesn't exist. Because most runways are 9,000 to 10,000 feet long by 200 feet wide or as short as 7,500 feet by 150 feet wide, long landings could create problems!

Though your initial experience with ATC in the UK may be confusing or frustrating, the system works well. The system appears "loose," but it provides you with every capability to accomplish your mission. The burden of responsibility is more directly on the aircrew for anticipating heading changes, clearances, unusual requests, etc. Don't fight the system – know it. Once you do, flying in the UK will be simple and enjoyable. That should leave more time for investigating those "ground" differences.

Traffic Pattern – Control and Performance



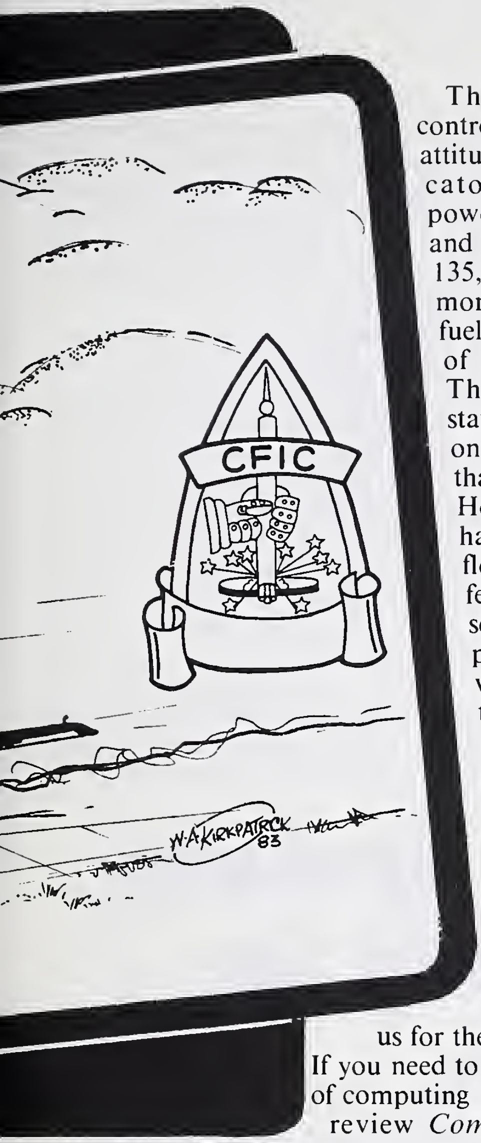
Maj Norman L. Hythecker
CFIC IP, Carswell AFB

Former CFIC IP candidate reveals KC-135 secrets!

Time after time KC-135 instructor pilot candidates attending CFIC comment that their previous instructors, both in the tactical unit and CCTS, have failed to provide them with adequate techniques, other than TLAR (that looks about right), for flying the aircraft with more ease, precision and safety. Every instructor pilot candidate who attends CFIC is presented with a multitude of techniques to accomplish this task, but it appears few instructors pass these techniques on to other pilots. It would also seem that evaluator pilots would give a bit more attention to this area since it definitely affects precise flying and safety. Let's discuss a few of the "secrets" taught to CFIC instructor pilot candidates.

The basics for flying any aircraft can be boiled down to two areas — control and performance. If you can precisely control the aircraft, you can achieve the desired or required performance you need. Being able to make an aircraft do precisely what you, the pilot, want it to do is what flying is all about. AFM 51-37, *Instrument Flying*, describes the Control and Performance Concept in Chapter Two as follows:

1. Establish an attitude and/or power setting on the control instruments which should result in the desired performance.
2. Trim until control pressures are neutralized.
3. Cross check the performance instruments to determine if the established attitude or power setting is providing the desired performance.
4. Adjust the attitude and power setting on the control instrument if a correction is necessary.



There are two basic control instruments, the attitude directional indicator (ADI) and the power indicators (EPR and RPM). In the KC-135, fuel flow is easier to monitor, so let's include fuel flow into the group of power indicators. The -135 tech order states that "EPR is the only engine parameter that indicates thrust." However, experience has shown that fuel flow can be used effectively as a target setting to get us to a position from which we can "fine tune" the EPRs. A knowledge of a few basic principles concerning pitch setting (gradient) and fuel flow settings can help us fulfill the first step of the Control and Performance Concept and prepare us for the steps of "fine tun- If you need to review the methods of computing descent gradients, review *Combat Crew* articles "TLAR," Feb. '82, and "Approach Lighting," May '82.

We'll begin with traffic pattern operations, the area that should be of greatest interest to pilots. Section VIII of the tech order directs us to compute traffic pattern fuel burned per hour by multiplying the aircraft's gross weight by 10%. This 10% figure is conservative since it is based on the aircraft with 30° of flaps, landing gear down, level flight, and Vref + 20 knots. It is logical to deduce that if your aircraft is operating on four engines, each will burn one-fourth of the fuel consumed. However, by changing aircraft configuration, fuel consumption may increase or decrease and thus require changes in power settings. (The following techniques apply to J-57 equipped aircraft.)

If the landing gear is up, you can reduce the approximate fuel flow (power) settings per engine by 500 pounds per engine. If you elect to raise the flaps to 20° or lower them to 40° or 50°, a fuel flow (power) adjustment of 500 pounds per engine for every 10° of flap change is required. For example, an aircraft weighing 160,000 has a fuel consumption of 16,000 pounds per hour in the traffic pattern. This equates to a fuel flow setting of 4,000 pounds per engine per hour with the landing gear extended, flaps 30°, level flight and Vref + 20 knots. If you raise the gear, the fuel flow (power) setting would be decreased to 3,500 pounds per engine. *Then,* if you retract the flaps to 20°, an additional fuel flow (power) reduction of 500 pounds per engine would be required to maintain level flight, and Vref + 30 knots. What is the required setting? You guessed it, 3,000 pounds per engine. Now that you understand the basic computations, let's look at the control inputs for climbing and descending in the pattern.

Thus far, we've been discussing level flight conditions in the traffic pattern and we all know that we must climb and descend a bit while completing the "circuit." Sharpen your wits and stay with me. How do configuration changes affect our control and performance if no power change is made? How do power changes affect our performance if no configuration changes are made?

If you are at Vref + 20 knots, 30° of flaps, gear down, level flight and you elect to lower the flaps to 40°, upon reaching Vref + 10 knots, you must: 1) add 500 pounds of fuel per engine to maintain Vref + 10 knots *OR* 2) enter a 1.5° descent (pitch change) to maintain Vref + 10 knots. Notice that in choice number two, you descended to maintain speed rather than making a power change. By descending on a 1.5° gradient, you achieve a descent rate of approximately 250 to 350 fpm. That's okay for 40° of flaps and 1.5° gradients, but what if you need to descend on a gradient greater than 1.5°? By reducing the fuel flow 500 pounds per engine now, you can achieve an additional 1.5° of gradient for a total gradient of 3.0°. For example, at 160,000 pounds, flaps 40°, gear down and descending on a 3° gradient, the "target" fuel flow setting would be approximately 3500 pounds per engine. In this situation, if you select 50° of flaps, you must add 500 pounds of fuel per engine (fuel flow would be 4,000 pounds per engine) to maintain Vref + 5 knots and the 3° gradient (ILS/PAR final approach glideslope). This is probably a bit confusing, so let's summarize and study Figure 1, Target Fuel Flow (Power) Settings.

Set target fuel flow when "on speed."

We can say:

1) The four engine, flaps 30°, gear down, level flight "target" fuel flow (power) is computed by multiplying the gross weight by 10% and dividing by four engines. That works out to 4,000 pounds fuel flow per engine per hour for a 160,000 pound aircraft. 2) The "correction" factors from this "target" fuel flow are approximately as follows:

a. Gear up vs gear down. Subtract 500 pounds of fuel per engine.

b. Flaps 20° vs 30°. Subtract 500 pounds per engine.

c. Flaps 40° vs 30°. Add 500 pounds per engine to maintain level flight or lower the pitch 1.5° thus descending at a rate of approximately 250 to 350 fpm.

d. Flaps 50° vs 30°. Add 1000 pounds per engine to maintain level flight or lower pitch a total of 3° thus descending at 500 to 700 fpm.

Cont. on page 26

The MONSTER You Create Is Only In Your Imagination

Maj Charles K. Calhoun, Jr.
19 BMW, Robins

I'm reminded of a story told by a young captain about his selection for his rated supplement tour several years ago. As the story goes, the word around the squadron was that two jobs were available in the wing and because of this need, the commander needed a couple of bright, motivated, intelligent officers who could take over. Our hero (Bill will be sufficient since this is a true story) saw this as his opportunity to excel. He let it be known that he was a volunteer. He only knew of one of the vacancies and he knew he would make an excellent choice as the T-4 simulator instructor (the T-4 is the Electronic Warfare Device).

One day during mission planning the commander asked him to step into his office. Bill could tell from the commander's overly pleasant invitation that this was not to be your basic "up one side and down the other" conversation. His heart began to pound as he allowed himself to imagine that something really great to remember was about to happen. Even before the commander began to speak, Bill was rehearsing how he was going to surprise his wife with the good news.

As the commander led into the conversation with the usual rhetoric that commanders use to relax their victims, Bill had already mapped out the strategy to make the old T-4 the best, most effective training device on the base. Although parts of the verbal exchange were missing from Bill's mind because of his uncontrollable daydreaming, his ears perked right up when the commander said, "Well, let's go take a look at your new office down the hall." As they turned the corner, entering the long hallway with dozens of office signs visible, Bill immediately locked onto the second to last sign, T-4 Trainer. Soon they were in front of the T-4 door and as Bill was selecting a few well chosen greetings for his new staff, he sensed something was wrong. The commander wasn't stopping at the T-4 sign. There must be some mistake, Bill thought. His commander continued walking down the dimly lit hallway and reached for the door handle of the last office and said, "Here it is, Bill, let's take a look inside." *Bill's entire life passed before his eyes because he knew what the sign over his office said without even looking: Scheduling.*

Although this story was written in a humorous vein, the unfortunate fact of life at many wings is that scheduling is literally the last place anyone would ever choose to be a member. Why does the very mention of the word *scheduling* strike terror in the hearts of the weak and bring a sneer to the lips of the strong?

My guess is that many crewmembers have always allowed themselves to be unwilling victims of the schedule, the innocent bystander who never knew what hit him. His only trips to scheduling were made in retaliation to some scheduling nightmare which had cost him and his crew not only their only free day on alert but forced them into flying on Friday night.

This fear of the unknown, coupled with no idea of the basic scheduling goals, have teamed up to cause tremendous friction at times between the basic crew and their schedulers. The animosity caused by this relationship has been responsible for everything from poor morale to poor performance. But why does this condition have to continue?

The answer is that it doesn't. As a scheduler myself I have been fortunate enough to be part of an organization which has broken the scheduling barrier. Although it may sound strange, no crewmembers in our unit wear a garlic clove around their necks to keep the schedulers away. The key to our success can be summarized in five easy steps which seem too simple to be effective, but I will guarantee their results.

1) First, every organization needs a plan. Make your plan realistic and achievable and not some exotic textbook panacea. A basic no nonsense plan works and will produce results. Build your long range plan on your unit's traditional commitments and you'll have a fairly good idea of your results before you even initiate your plan.

2) Participate – Author's pride is a part of us all so allow more authors to build your schedule. Invite training flight, standboard, squadron commander, operations officer and flight commanders down to scheduling continuously. Most important, invite them down for monthly planning. If the scheduler explains the rules of building a monthly schedule and turns it over to the audience, you would be astonished at the results. It's funny

how the mystery of scheduling soon disappears after a few of these sessions. It is also amazing how well the schedule tends to stay together once all the participants have contributed their two cents worth.

3) When it's time to build the weekly schedule, get the crew to make some inputs. You may be pleasantly surprised at how excited a crew can become flying their own creations. Design the most productive sortie possible without working your crew to death. The idea is to design sorties which flow naturally on a recurring basis and duplicate the mission of your unit. Be a little creative. Don't do the same profiles over and over. Ask the crews for innovations and be prepared for the good as well as the bad.

4) Once the die is cast and you are flying your schedule, be available to the crews on mission planning day to clear up any problem areas. Your interest during mission planning may help the crew design a totally productive flight and not a half-hearted attempt to get it over with. Once the sortie is airborne try to stick to the original plan without surprising the crew too much. Remember, always weigh flying time costs and realistic training before foolishly losing either.

5) The last step is review. After you have built your plan, encouraged participation, designed the best schedule and supported the flying phase, it's time to turn around and see if it all worked. If the folks who put the plan together don't take a part in this step, the feedback will not produce better results in the future and your unit will never be the best it can be.

I'll be the first to admit that I may have oversimplified a bit. I have not addressed skill or leadership which are certainly key ingredients in the formula of success. However, I believe that if a group of men are convinced and determined enough to be the best, no matter how ordinary they are, they will be the best.

My suggestions in this article are simple and draw upon principles which have proven themselves since the first men decided to do the same thing together. Scheduling doesn't have to be the inquisition, a star chamber of horrors waiting for this next helpless prey unless you chose it to be. I can assure you that working in scheduling is an exhilarating experience if the challenge is shared by everyone. If you chose to suffer this challenge alone, your crewmembers may certainly require the use of garlic cloves to protect them from the monster you may become.

IS IT CORRECT? COULD IT BE BETTER?

Capt David J. Bertholf
3901 SMES

I spent six years at a missile wing and was on the receiving end of many 3901st Strategic Missile Evaluation Squadron evaluations. Now, after being with the 3901st SMES for a little over a year and being involved personally in conducting evaluations of three missile wings, I'd like to share an insight with you that was a real eye-opener to me. The most gratifying and I think little known element of evaluations is the effort expended by 3901st team members to insure the validity of each error that is assessed. Individual evaluators; functional area evaluator teams; the directors of operations, maintenance and communications; and the team chief all get involved in the discussion/determination of error assessment.

The 3901st evaluators are professionals. They are selected for duty with the 3901st because they have proven to be among the most knowledgeable and proficient personnel in their respective AFSCs throughout the missile force. They know the hardware as well as the content and proper use of the technical data pertaining to their areas of expertise. As professional experts, their only concern during evaluations is to insure the wings' people and hardware are able to perform their mission according to the standards and guidelines prescribed in applicable directives. In other words, can they perform their job as they're supposed to?

When an evaluator identifies a deficiency, it is because in his judgment that specific element of the area evaluated did not comply with the required standard. Errors are not awarded based on unsubstantiated opinion; they are awarded based on observable, verifiable circumstances. However, identifying the deficiency is only the first step of an extensive review process that subsequently takes place.

This process is a multi-tiered procedure that involves the scrutiny of each deficiency by everyone from the evaluator who awarded it up to the team chief. It is very similar in concept to the multi-level review process used at the wings. After an evaluator identifies a deficiency, the evaluators, OIC, and director of the affected functional area review it with the team chief. All circumstances surrounding the deficiency are discussed. This practice promotes the consideration of various experiences and perspectives that can add additional insight to the error assessment. Occasionally, outside expertise is also obtained from other HQ SAC agencies, AF Logistics Command and contractors. The point is, final assessment of an error is not decided by a single evaluator, but by the consensus of team members and other appropriate agencies following a very deliberate and thorough review process.

the concern of the evaluators is not to "give errors," but . . . .

In addition to reviewing error assessment, SMES personnel also analyze the ramifications of the errant actions. The evaluators assess the impact of the discrepancy on the successful and safe operation of the weapon system. They look at why the evaluatee did what he/she did, its propriety in accordance with appropriate directives, and its ultimate impact. A similar review is conducted concerning hardware and software configuration. The objective is to hopefully learn from the mistakes and identify possible improvements.

Despite this extensive scrutiny prior to the final assessment of each error, members of the unit being evaluated sometimes disagree with its validity. This disagreement can arise from differing interpretation of directives, unique local circumstances and procedures, differing determinations of evaluatees' performance and other considerations. When disagreement exists, the unit may discuss that particular error with the SMES team chief. If appropriate, team members then reevaluate their assessment of that error in light of the unit's contentions, and the entire review process is repeated.

Remember, the concern of the evaluators is not to "give errors," but to insure that the men and women who operate and maintain our ICBM weapon systems have the best possible hardware, directives and procedures and know how to use them correctly. This concern is essential to the effectiveness of our missile force. It leads to the identification of current hardware, personnel proficiency and procedural problems; of vague, incomplete and inconsistent directives; and of potential future problems. But most importantly, it leads to the recognition and correction of these weaknesses.

I'm convinced the majority of people working with our ICBMs are just as concerned with insuring the best possible operation of the weapon system as the SMES evaluators. You can help. Do your job the best way you know how. Set the example for your co-workers and encourage them to do the best job they can do. Pride in being good at what you do and who you do it with is infectious. Hand-in-hand with doing your best is being completely knowledgeable of your work environment. Study the governing directives and the hardware. Know the equipment and the procedures. Only through this intimate familiarization with the tools of your trade will you be able to do your best. Then as an expert in your job you should look for ways to improve it. Be alert for better procedures, equipment and hardware. When you have questions or suggestions contact your SMES counterpart. They are anxious to work with you to solve any problem or implement new methods and materials to do the job better. With your help we can make our ICBM force and your units' next evaluation the best ever.

Welcome To The F. O. L.

(Forward Operating Location)

Capt James C. McNamara
909th AREFS, Kadena AFB

Picture this. You have just parked your snowmobile and entered the squadron to check your crew box for the latest *Combat Crew* when the Ops Officer yells, "Hey, you, get yourself and crew R-111 into mission planning then crew rest. You leave tomorrow for Diego and I need your information now."

Wow! A midwinter TDY to San Diego! My crew won't believe it, it's too good to be true.

"It isn't, TURBINEHEAD! It's Diego as in Garcia and I need that paperwork yesterday!" shouts Lt Col Cy Clops, Operations officer and approver of leave, extra alert and OERs. Yes, sir, I'm right on it. Paperwork's coming right up. Gee whiz, where do I start . . .

This article was inspired by numerous TDYs within the area of operations of the Pacific and European Tanker Task Forces and included visits to such garden spots as Guam, Diego Garcia, Okinawa, Korea, Philippines, Australia, Egypt, England, West Germany, Spain, Alaska and Hawaii. Trips to these and other exotic destinations present unique problems which are rarely encountered by SAC crews while flying in the CONUS. Its purpose is to help you prepare for these eventualities and offer some helpful suggestions; however, they are no substitute for common sense. Four logical areas covered are: **Preparation, Enroute, Arrival,** and **Return.**

PREPARATION

Let's consider some important items before leaving. First, check aircraft status. If they are giving you the "Hangar Queen," it would be worth your time to check the aircraft maintenance records for current (FAI) and recurring discrepancies. Insure the aircraft will not require maintenance in the near future (i.e., SOAPS, engine change, due phase). You may consider changing aircraft, if possible, or insure that all required maintenance is complete before leaving. You sign for the aircraft because you fly it. Insure enough oil, hydraulic fluid, chocks, tiedown straps, inlet covers, plywood, and a tailstand are on board. You can't get this stuff everywhere and the tanker won't fly for a month without oil or hydraulic fluid.

Next, check life support and airlift. Sometime during this odyssey you might have to carry maximum passengers. It's always better to have extra rafts, LPUs, and oxygen bottles than not enough. Also, any cargo that you carry must be properly configured and weighed (manifested). The boom operator will also act as steward and loadmaster so make sure he is aware of his extra responsibilities. Realize that he might require extra time to perform these duties. Additionally at Life Support, get everyone's helmet inspected and insure everyone has full mobility or EWO gear because you might not go to a warm place after all!

On a personal note, suggest that everyone make arrangements before leaving for paying bills, rent, forwarding mail and pay (take your most recent copy of your monthly pay statement). Bring as many copies of your TDY orders as are available. If time permits, take an advance travel payment and purchase traveler's checks. You may not be able to cash your checks out of the country and the cost of the traveler's checks is a reimbursable travel expense. Take charge cards but leave all local cards at home to prevent loss. If you don't have an AF club card, get one. It may be your only way to cash checks at some bases. If you have a passport and shot record, bring them.

Now, most important of all, mission plan. Plan to the best of your ability for all known missions and tasking. Check with current operations to see if they can provide a preplanned mission. MAC Global Weather can also provide you with a current winded flight plan. This can be requested through your base weather detachment. They will need your departure time (GMT), type aircraft, fuel load, flight level and proposed route of flight. This product should be considered a reliable cross-check for your SAC Form 200. You will probably be required to file a DD Form 1801, International Flight Plan. Check FLIP General Planning, Chapter 6, to get it right.

When mission planning outside CONUS, you're pretty much on your own as far as filing, etc. Check the Flight Information Handbook and international notams for your area of flight. Traveling over water, the selection of landing alternates takes on added significance. Choose them carefully, keeping in mind the support available at foreign locations. Consult the enroute supplements. Does the alternate have J-4 fuel? Can we use A-1, J-5, J-8 fuels? If you can get gas, how

do you pay for it? Try to obtain a fuel issue voucher, DD Form 15, before you leave. If you don't have one and land in a country with a U.S. embassy, ask them to make arrangements for reimbursement and diplomatic clearance, if required. In most countries your point of contact should be the U.S. military attache. Remember to check the Foreign Clearance Guide for further guidance. If you have to RON, remember you are responsible to insure that your crew, including crew chiefs, obtain adequate quarters and crew rest, your aircraft is secure, and customs and immigration requirements are complied with.

ENROUTE

Except for accurate navigation, communication is probably the most important duty performed on over-water flights. Don't think of position reporting as a chore. Its purpose is to avoid traffic conflicts and provide for accurate location of missing airmen, possibly you! SAR procedures may be initiated if you fail to report your positions or relay them to the proper FIR. If you are not in radar contact, rescue will look for you along your filed route of flight based on your reported times so be accurate. Use standard terminology on the HF (check flight information handbook), spell phonetically, and speak slowly using ICAO identifiers for bases and reporting points. Report unusual weather (turbulence, icing, or severe weather) and notify ATC when you deviate for weather. If HF fails, use UHF to pass position reports to other aircraft. Try guard (243.0), MAC common (349.4, 319.4) or Navy Fleet Common (277.8). Squawk emergency, even a passing ship will report that.

When communication is reestablished, or upon landing, insure that FIR crossing times are relayed to the controlling agencies whose airspace you have passed through. This lets them know that you have exited their airspace safely. Also, on transoceanic routes, it may take hours to get a higher altitude. Request the climb early and listen on the radio. If there is traffic on your route traveling in the same direction at a higher altitude you need 20 minutes separation in order to climb above it. Speed up, slow down, or coordinate with the other aircraft to expedite the climb. If fuel becomes critical, let the controlling agency know. If push comes to shove you may have to declare an emergency and climb. Be prepared to explain your actions if things get that critical.

Keep destination weather updated while enroute. On a ten-hour flight, your takeoff forecast could be 24 hours old or more upon arrival. Update at least once in flight through HF phonepatch or UHF.

Long over-water flights also allow fuel conservation techniques to be much more effective. Check optimum altitude and airspeed frequently and consider flying with a slightly aft center of gravity.

ARRIVAL

Upon arriving at the F.O.L. or any enroute stop, heed customs authority and be cooperative. Don't deplane without their clearance. However, don't relinquish total control of the aircraft or cargo to anyone. It should be treated as U.S. property and only your authority permits anyone aboard. If you are told that any of your possessions are illegal, accept it. You don't want to be placed on International Hold anywhere but in the U.S.A. Be courteous and patient. Foreign customs officials may not speak English and you probably don't speak their language. In addition they may be confused by some of your personal equipment. If problems arise, a smile and patient manner will go a long way.

Be open to suggestions from other services (Navy and our allies: Australian, British, etc.). Try to learn how they accomplish the same mission, and you might learn something worthwhile. Review appropriate flight manual precautions for different climactic conditions; dusty areas present unique problems as do unusually cold or icy ones. Lastly, since you may be your own Commander, DO and Command Post, keep an eye on the weather as you might have to make a decision to leave a location to escape severe weather (typhoon, dust storm, hail, monsoon, etc.).

RETURN

Finally, do a favor for those that follow you. Pass on to others any information that will make their TDY a better one. If flight plans or charts are in error, notify the responsible agencies. If required equipment was not available, tell your staff as they may not be aware of the problem. Above all, relay your experiences to those that did not have an opportunity to go because next time they might.

Missile Maintenance

A1C Cecil J. Overmyer, 308 SMW, Little Rock AFB, is SAC ICBM Maintenance Airman of the Month. Assigned to the 308 MIMS Reentry Vehicle Branch, Amn Overmyer has been recognized as a "Professional Performer" during both the SAC IG and 3901 SMES visits. These accomplishments were the result of his meticulous attention to detail throughout his training and operational activities. A1C Overmyer has the potential to advance to any level of responsibility and is quick and aggressive in accepting new challenges. To quote his DCM, "A1C Overmyer runs in the fast lane, well ahead of his contemporaries." Recently, because of austere manning within the branch, Amn Overmyer was assigned to manage the RV Branch munitions control section—a tough job that would normally require a top NCO.

Aircraft Maintenance

A1C Randy M. Souder, 55 OMS, Offutt AFB, is SAC Maintenance Airman of the Month. As an aircraft inspection team member, Amn Souder has consistently performed his duties in an outstanding manner. He received five "zero defect" ratings from Quality Control during Quality Verification inspections. His exceptional performance and attitude helped the Inspection Branch of the 55th OMS achieve an Excellent rating during a recent IG visit. IG evaluators also singled out Amn Souder to receive an Outstanding Performance award. During the last HQ SAC Logistics Readiness Team evaluation, Amn Souder earned two "zero defect" ratings on Area 1 inspection and lubrication tasks. As a night supervisor, he has frequently taken on responsibilities usually reserved for experienced NCOs and has consistently expended great personal effort and initiative to complete the toughest jobs in order to keep the aircraft fleet mission ready.

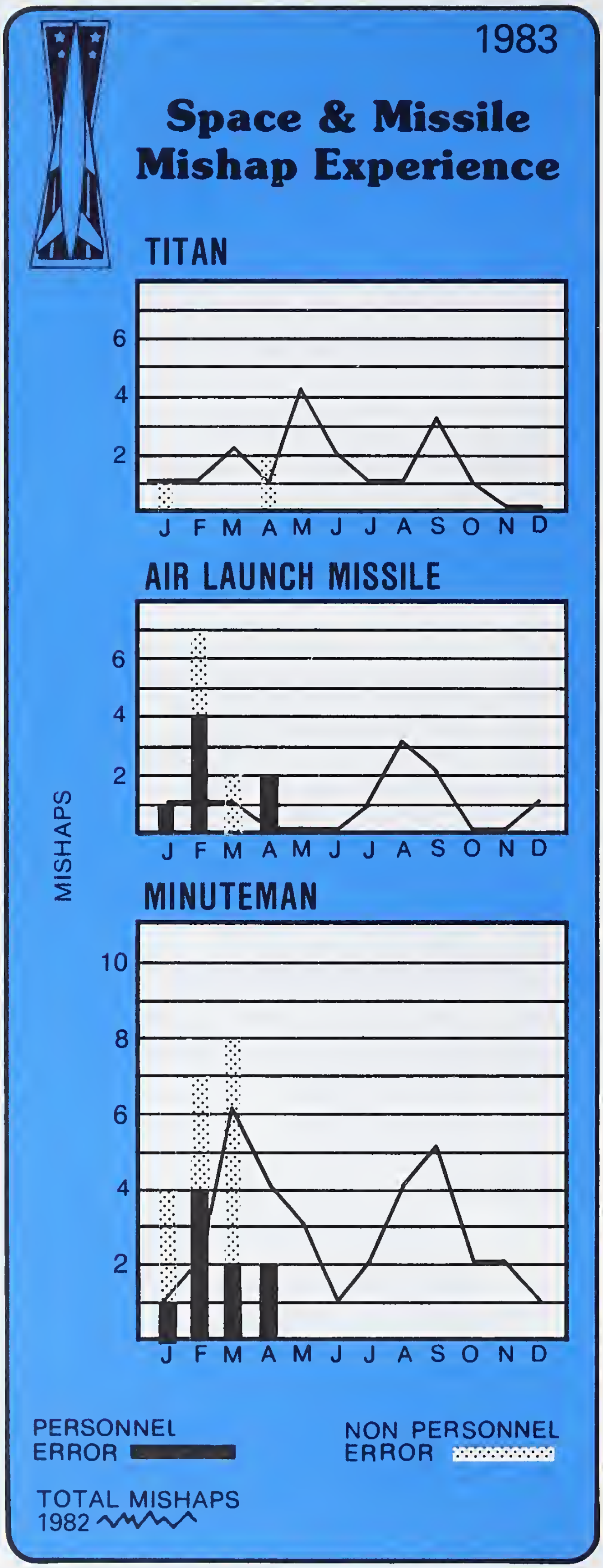
PROFESSIONAL PERFORMERS

Missile Crew

The 308 SMW Crew R-129: 1Lt Joseph W. Broschart, MCCC; 1Lt Wendell G. Huskey, DMCCC; Sgt Mark A. Brasseur, MFT; and A1C Keith E. Jones, MSAT, is SAC Missile Crew of the Month. Recently Crew R-129 responded quickly and professionally upon receiving a report of vapors coming from the complex topside. After entering appropriate checklists and coordinating a cautious penetration of the silo with the wing command post, the MSAT and MFT determined that no hazard existed. Due to the hazard report being initiated by civilian authorities, the crew's quick response prevented a false public alarm from spreading. On another alert three weeks later, a maintenance team on launch duct seven reported vapors coming from the Stage I oxidizer dead leg drain. The crew evacuated the team back to the control center. The oxidizer vapor checklist was entered and base assistance for safing the leak was requested. DO22 personnel arrived and were dispatched to maintenance safe the butterfly valve lock. Once in the silo, one of the DO22 officers collapsed. The MCCC and MFT quickly penetrated the silo to assist the incapacitated officer back to the control center. Several potentially serious consequences were averted by Crew R-129's professional and expert response.

Flying Crew

Crew S-02, 43 SW, Andersen AFB: IP Lt Col Eldon A. Chambers, P Capt David E. Bullock, CP Capt Richard A. Ries, RN Capt David L. Jareo, N 1Lt Thomas E. Elmore, EW Capt Brian W. O'Connell, and G SSgt Hulmer J. Heath, is SAC Flying Crew of the Month. Crew S-02 was in a B-52D initiating climbout from a low level training route when a loud bang and vibration occurred on the left side of the aircraft accompanied by a surge of hot air and instrument fogging. The pilots observed the number four engine EGT to be 850° and shut down the engine using T. O. emergency procedures; the number four EGT dropped to 350°. The pilot then declared an emergency and elected to discontinue climbout and leveled off at 5000′ MSL. Prior to level off, an explosion occurred in the number four engine and the gunner reported flames coming from the engine; flames were also observed coming from a hole in the cowling and going up the engine pod strut, over the wing and trailing the aircraft up to 60 feet. The pilot shut down the number three engine and the crew accomplished emergency procedures for wing fire. During the approach, the pilot and the gunner observed the number four cowling turning white with its structural failure apparently imminent. After touchdown, within the first 1000′ of the runway, the pilot directed the crew to abandon the aircraft while he and the copilot shut down the remaining engines. Fire department personnel extinguished the flames within a minute and a half; total time from first explosion to the crew's egress was 12 minutes.



B-52 SPN/GEANS

SSgt Fred Dickenson
AFLC Office of Public Affairs

Air Force Logistics Command has opened the first of 15 planned test stations for SPN/GEANS.

No, SPN/GEANS is not a recent development in genetic research or the latest in designer pants. It's the latest in B-52 inertial navigation.

The Standard Precision Navigation Gimballed Electronic Aircraft Navigation System is special because its gyros have no ball bearings. Conventional gyros spin on ball bearings. Failure of these bearings is the most common cause of breakdown in inertial navigation systems.

In SPN/GEANS the gyros consist of hollow metal balls that spin suspended in an electrostatic field. The balls do not touch anything while they are spinning, so there is no friction to cause wear.

Using its own mini-computer, the $170,000 test station at the Aerospace Guidance and Metrology Center, Newark AFS, Ohio, is able to rapidly pinpoint a problem in a system, down to the smallest replaceable part. The testing is semi-automatic, allowing the technician to interrupt the process when necessary but maintaining the speed advantages inherent in automation.

SPN/GEANS was first used in the B-52Ds. It is now being installed in the B-52G and H models as part of the offensive avionics systems modification.

Production began on the offensive avionics systems in 1978, and already 29 G's and 11 H's have been completed.

The SPN/GEANS used in the older D model B-52s are being removed as the aircraft are retired. Once removed, the navigation system will be installed in the newer B-52s. When modification is completed, sometime in 1986, 169 G models and 96 H models will have the new navigation system. That means that, since each aircraft uses two of the SPN/GEANS, AGMC will be performing depot maintenance on more than 500 of these systems.

As many as 150 of AGMC's technicians may be working on the program, according to program manager Dave Campbell of AGMC's Directorate of Maintenance.

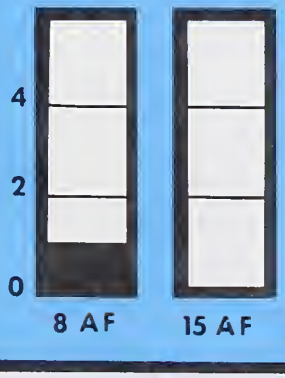
The system was designed and built by Honeywell Avionics Division in Clearwater, Fla.

SAC'S TEN YEAR FLYING SAFETY RECORD

CLASS A FLIGHT MISHAPS

YEAR	73	74	75	76	77	78	79	80	81	82	83
TOTAL MISHAPS	5	8	4	4	4	1	5	4	4	2	1
FLYING HOURS 100,000	6.1	5.1	4.2	3.9	3.7	3.6	3.6	3.4	3.5	3.5	1.1
FATALITIES	0	14	7	22	10	5	7	2	14	9	7
RATE	.82	1.6	1.0	1.0	1.1	.28	1.4	1.2	1.2	.58	.32*

*Estimated Rate based on 310,000 Flying Hours



27501

APRIL FLYING HOURS

108932

1983 FLYING HOURS

APRIL	B-52G

1983 MISHAP STATS

Cont. from page 15

Traffic Pattern

Figure 1 is a traffic pattern diagram depicting various configurations, conditions and fuel flow settings.

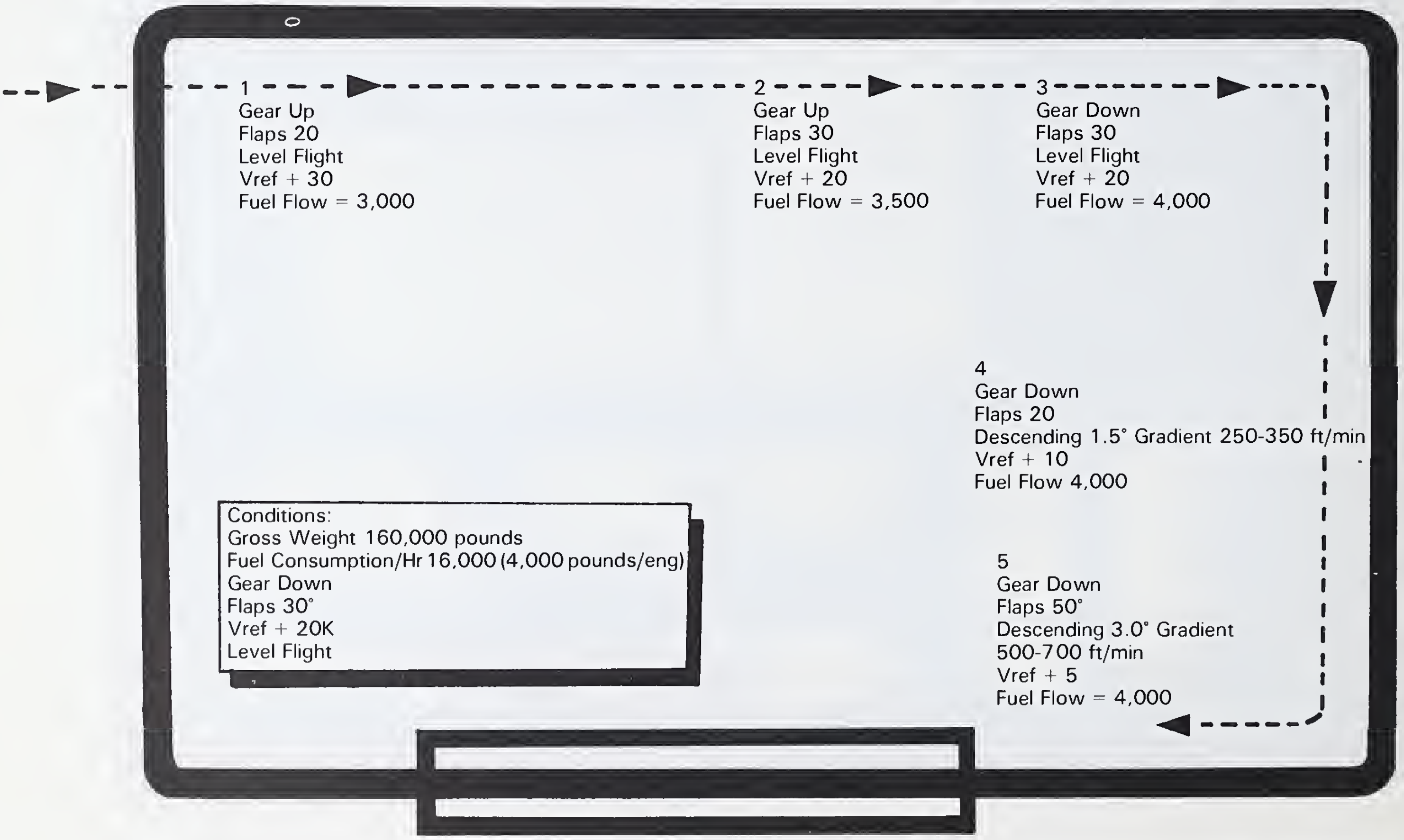
A couple of final notes. The "target" fuel flow per engine must be set when you reach the speed you desire. If you set the "target" with excessive speed, you will tend to hold that speed. If you set the "target" below the desired speed, you will tend to hold the lower speed or perhaps decelerate if you're behind the "power curve." The final approach fuel flow settings are based on light wind conditions (up to 10 knots). A headwind (greater than 10 knots) or tailwind condition will require adjustments to the "targets" to allow you to achieve the desired performance condition. Remember, you'll need to adjust the power to account for wind and gross weight changes. Lastly, if your computed fuel flow setting for any configuration is less than 3,500 pounds per engine, you will probably discover that smaller power reductions (200-250 pounds per engine) need to be made rather than the 500 pound increments.

Next time you fly, attempt to use these techniques. Remember, initially you might have a bit of a problem but look for the overall picture or trend and be patient. Let the power adjustments you make have time to take effect. You might have to write the "target" power settings down initially to keep them straight, but after you practice a little, the power "target" and computations become easier.

In subsequent articles, we hope to expand on these basic techniques to include takeoff, cruise, enroute descent, missed approach, and others. If you have any questions concerning the technique of computing fuel flow "targets," call us at 739-5216 or 347-2235. In the meantime, remember to always *Fly the Airplane!*

Figure 1

"Target" Fuel Flow (Power) Settings for a Typical SAC 1200 ft Traffic Pattern and 3° Final Approach Glideslope



SAC SAFETY SCREEN

These Warriors . . . The Cutting Edge of The National Resolve

320 BMW, Mather Crew E-24: P Capt Michael J Van Velzer, CP Capt Gary P Fazio, RN Capt James W Lamb, NN Capt Harry J Thompson III, EW 1Lt David W Jones, AG SrA Christopher B Austin

320 BMW, Mather Crew E-108: P Capt Keith A Atwell, CP Capt Leon M Hoffsette, NN 2Lt Lawrence E Wilson Jr, BO A1C Michael L Post

917 AREFS, Dyess Crew E-122: P Capt Glen R Moore, CP Capt Eric H Cappel, N 1Lt Terry L Ponton, BO Sgt Merri S Keister

337 BMS, Dyess Crew E-11: P Capt Scott R Ingersoll, CP 1Lt Richard B Witt, NB Capt Scott P Spencer, N 2Lt Robin J Traylor, EW Capt David F Sanders, G SrA Perry L Tillman

328 BMS, Castle Crew IT-4: IP Capt Albert G Connor, IRN Capt James L Frey, IEW Capt Charles Fletcher, IG SSgt Bruce R Hogan

924 AREFS, Castle Crew R-109: P Capt Charles A Parris, CP Capt Lynn W Hammond, NN Capt Charles W McMillian, BO SSgt Charles R Clift

93 AREFS, Castle Crew IT-36: IP Capt Michael H Laney, IN Maj Steven G Kaessner, IBO TSgt Gordon T Daffern

916 AREFS, Travis Crew S-102: IP Capt Gary P Kaufman, CP 1Lt David P Bitting, IN Capt Gregory E Kuntz, IS TSgt William F Hall

916 AREFS, Travis Crew R-154: FP Capt David P Diller, CP 2Lt Robert W Stevenson, IN Capt James S Bair, BO Sgt William E Wright

22 AREFS, March Crew R-123: FP Capt Frederick Roggero, CP 1Lt Kenneth W. Harris, NN 1Lt Michael R Kelley, BO SrA Anthony O Payne

9 AREFS, March Crew: FP Capt John R Thomas, CP Capt Randy P Viera, FE TSgt Delmar L Patrick, BO SSgt George M Perez

6 SW, Eielson Crew S-02: IP Capt Eric C Juhre, CP 1Lt Richard E Black, N-1 Capt Steven C Eivins, N-2 Capt Mark S Wnuk

6 SW, Eielson Crew E-15: RCC (TC) Capt John C Peterson, ATSO (R-1) Capt Gregory L Murphy, ATSO (R-2) Capt James L Small, R-4 1Lt Nelson T Burgos, MT 1Lt James F Turner, PT SSgt Kenneth A Getsee Jr, ET TSgt Francis X Gray

91 SMW, Minot Crew E-025: MCCC 1Lt James R Schudrowitz, DMCCC 2Lt Keith G Davis

44 SMW, Ellsworth Crew E-030: MCCC 1Lt Stanley W Toenjes, DMCCC 2Lt George F Williamson

90 SMW, F E Warren Crew S-041: MCCC Capt Manuel Mejia Jr, DMCCC 2Lt Wes E Klett

321 SMW, Grand Forks Crew R-089: MCCC 1Lt Danny F Hargraves, DMCCC 2Lt Philip B O'Connor

341 SMW, Malmstrom Crew E-069: MCCC Capt Stephen T Wilson, DMCCC 2Lt Terry E Hickman

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FLARE

A ROMAN GENERAL'S OPINION OF "MILITARY CRITICS"

2107 Years Ago .

LUCIUS ÆMILIUS PAULUS, a Roman Consul, who had been selected to conduct the war with the Macedonians, B.C. 168, went out from the Senate-house into the assembly of the people and addressed them as follows:

"IN EVERY circle, and, truly, at every table, there are people who lead armies into Macedonia: who know where the camp ought to be placed; what posts ought to be occupied by troops ; when and through what pass that territory should be entered ; ◆ where magazines should be formed; how provisions should be conveyed by land and sea; and when it is proper to engage the enemy, when to lie quiet. ◆ And they not only determine what is best to be done, but if any thing is done in any other manner than what they have pointed out, they arraign the consul , as if he were on trial before them. These are great impediments to those who have the management of affairs; for every one cannot encounter injurious reports with the same constancy and firmness of mind as Fabius did, who chose to let his own ability be questioned through the folly of the people, rather than to mismanage the public business with a high reputation. I am not one of those who think that commanders ought at no time to receive advice; on the contrary, I should deem that man more proud than wise, who regulated every proceeding by the standard of his own single judgement . What then is my opinion? That commanders should be counselled, chiefly, by persons of known talent; by those who have made the art of war their particular study, and whose knowledge is derived from experience; from those who are present at the scene of action, who see the country, who see the enemy; who see the advantages that occasions offer, and who, like people embarked in the same ship, are sharers of the danger. ◆ If, therefore, any one thinks himself qualified to give advice respecting the war which I am to conduct, which may prove advantageous to the public, let him not refuse his assistance to the state, but let him come with me into Macedonia. ◆ He shall be furnished with a ship, a horse, a tent; even his travelling charges shall be defrayed. But if he thinks this too much trouble, and prefers the repose of a city life to the toils of war, let him not, on land, assume the office of a pilot. The city, in itself, furnishes abundance of topics for conversation; let it confine its passion for talking within its own precincts, and rest assured that we shall pay no attention to any councils but such as shall be framed within our camp."

Livy, (*Titus Livius) History of Rome.
Vol. 7, Book XLIV, Chapter 22.
Translation by George Baker, A.M.

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* Titus Livius (Livy) born 59 B.C., died A.D. 17.